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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,659	09/19/2007	Michael Boschert	HMNZ 200049US01	1805
27885	7590	01/17/2012	EXAMINER	
FAY SHARPE LLP 1228 Euclid Avenue, 5th Floor The Halle Building Cleveland, OH 44115			ANGADI, MAKI A	
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			1713	
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			01/17/2012	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/591,659

Applicant(s)

BOSCHERT ET AL.

Examiner

MAKI ANGADI

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 September 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-26 and 28-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14, 16-26 and 28-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/3/2010 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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2. Claims 1-14, 16-19, 28-37 and 39 are rejected under 35 U.S.C. 103(a) Yokota et al. (US Patent No. 6,497,926) in view of Clarke et al (US Patent No. 6,099,913), Nakamura et al. (US Patent No. 4,230,743) and Ruschak et al. (US Patent No. 5,885,660).

**As to claims 1, 3, 16-17, 28-30, 35, 36 and 39,** Yokota discloses a method for producing a thermal paper or recording material (col.2, lines 38-40) which reads on the steps comprising a substrate (col.2, line 41), pigment coat or dispersion agent (col.12, line12), a thermal reaction layer in the form of heat-sensitive recoding layer (col.8, lines 13-16) and, optionally one or more intermediate coats or top coats as protective layers via the curtain-coating method (col.8, lines 13-23, and lines 64-67) with an aqueous suspension containing pigments, binding agents and additives(col.12, line 12-15), color pigments or formers (col.7, lines 16-17 and col.9, lines 16-20) aqueous application suspension containing calcined kaolin (col.12, line 64) having a solid matter contents of approximately 100 parts (Examples, Cl.14) by means of the curtain-coating method (col.8, lines 13-23).

Yokota discloses the drying method (col.7, lines 9-25) but is silent about the operating speed of the curtain-coating method. However, Clarke discloses curtain coating method at web speeds (1000 cm/s or about 600 m/min) (Fig.2c and Fig.2d) and drop height (or curtain height) of about 10-30 cm (Fig.1m, col.4, line 55, col.6, line 61). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to select operating speeds in

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excess of 500 m/min in curtain coating method because Clarke illustrates in Fig.2c, 2d that high speed method having wide viscosity latitude negate the limitations of puddling and air entertainment, thereby reducing the amounts of volatile components employed in the coating compositions (col.3, lines 55-59).

Yokota discloses the use of calcined kaolin (col.12, line 64) but does not explicitly disclose their particle size, application weight, and nozzle throughputs. However, Nakamura discloses the particle size in the range of about 0.1  $\mu\text{m}$  to about 100  $\mu\text{m}$  (col.8, lines 53-54), weight ratios in the range 10-70 wt% (col.8, lines 4-10) and application weight 5-8 g/m<sup>2</sup> of the aqueous application suspension containing the kaolin (col.13, lines 28-40) and operating speed of about 1000 m/min or higher and there is no limit in theory (col.7, lines 18-20) in curtain coating method (col.7, lines 20-23) and nozzle or slit (6) throughputs (Fig.1) in the range 0.66-1.0 cc/cm/sec or more (col.4, lines 39-42). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to select particle size, application weight in the curtain coating method employed by Yokota because Nakamura illustrates in Fig.1 that the adjustment of particle size and the application weight in the curtain coating method are crucial for producing a pressure-sensitive copying paper of high quality which eliminates the disadvantages of conventional techniques.

Yokota is silent about exit gap in the curtain spread head of the curtain-coating method. However, Ruschak discloses the process of maintaining a single gap of the order of 0.1 inch or 0.25 cm (col.3, lines 5-11) or smaller, and the gap

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varies along the length of the channels as desired (Fig.4) (Fig.6, lines 21-25). Therefore, one who is skilled in the art at the time of the invention was made to adjust the gap in the curtain spreader of the curtain-wall method because Ruschak illustrates that the adjustment of gap is desired so that the shear rate to which the coating composition is subject is relatively low (col.3, lines 5-13).

**As to claim 2**, Yokota discloses the solid matter contents of the application suspension between 35 and 60% by weight (Example 1, col.14).

**As to claims 4 and 5, 31, 32 and 37**, Yokota discloses the viscosity for calcined kaolin in the range of about 100-2000 mPa.s and surface tension of about 18-30 mN/m (Example 1-12, col.14, lines 20-21).

**As to claim 6**, Yokota discloses the use of a synthetic carrier paper with basis weight of approximately 60 g/m<sup>2</sup> (col.15, lines 13-14).

**As to claims 7, 33 and 34**, Yokota discloses the use of synthetic fibers in addition to natural cellulose fibers (col.12, lines 19-48) in the range of about 5-60 % by weight, Example 1-17, col.14, lines 18-34).

**As to claims 8 and 9**, Yokota discloses the use of calcined kaolin (col.12, line 64) with customary additives in the form of processing auxiliaries such as inorganic and organic pigments, resin, antioxidants, UV absorbent, alkali salts, methyl cellulose, polyvinyl alcohol, acrylates and other additives (col.12, lines 60-67, col.13, lines 1-38) and other retention auxiliaries and surface-active substances (col.12, lines 19-49 and col.13, lines 5-38).

**As to claim 10**, Yokota discloses the particle size of about 1-2  $\mu\text{m}$  (col.27, line 20-23, Example 24, Example 30 col.28 lines 49-51).

**As to claim 11**, Yokota discloses aqueous application suspension containing calcined kaolin (col.12, line 64) contains a binding agent (col.12, lines 20-49).

**As to claims 12 and 13**, Yokota discloses application weight of aqueous application suspension containing the calcined kaolin (col.12, line 64, Example 1, col.14) in the range 6  $\text{g}/\text{m}^2$  to 60  $\text{g}/\text{m}^2$  (col.15, lines 6-17).

**As to claim 14**, Yokota discloses intermediate pigment coat (col.12, lines 8-19 and lines 60-67) after drying by means of the curtain-coating method (col.8, lines 55-60, col.11, lines 51-57).

**As to claims 18 and 19**, Yokota discloses the formation of thermal reaction layer is in the range of about (100-2000  $\text{mPa}\cdot\text{s}$ ) and surface tension 30  $\text{mN}/\text{m}$  (see Examples 1-12 on cols. 14-16).

### ***Claim Rejections - 35 USC § 103***

3. Claims 20-26 and 38 are rejected under 35 U.S.C. 103(a) Yokota et al. (US Patent No. 6,497,926) in view of Clarke et al (US Patent No. 6,099,913) and Nakamura et al. (US Patent No. 4,230,743) as applied to claims 1, 15 and 20, in further view of Iwasaki et al. (US Patent No. 6,800,588).

**As to claims 20 and 38**, Yokota is silent about the Bekk smoothness of the thermal reaction layer. However, Iwasaki discloses the surface smoothness of at least 150 second (col.11, lines 11-12). Therefore, it would have been

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obvious to one of ordinary skill in the art at the time of the invention was made to adjust smoothness of the reaction layer because Iwasaki discloses that the surface smoothness ensure good dot reproducibility on the recording material comprising it 9col.11, lines 13-14).

**As to claims 21 and 22**, Yokota discloses aqueous application suspension for the formation of the thermal reaction coat contains pigments that include oxides (col.12, lines 8-18, lines 60-67 and col.13, and lines 1-17)).

**As to claim 23**, Yokota discloses the particle size of about 1-2  $\mu\text{m}$  (col.27, line 20-23, Example 24, Example 30 col.28 lines 49-51).

**As to claim 24**, Yokota discloses thermal reaction layer (col.8, lines 12-23) and additional layers formed as protective layer (Examples 1-17) to enhance the capability of being printed on (col.13, lines 39-67)

**As to claims 25 and 26**, Yokota discloses the drying method (col.7, lines 9-25) but is silent about the operating speed of the curtain-coating method. However, Clarke discloses curtain coating method at web speeds (1000 cm/s) (Fig.2c and Fig.2d) and drop height (or curtain height) of about 10-30 cm (Fig.1m col.6, line 61 and col.4, lines 54-56). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to select operating speeds in excess of 500 m/min in curtain coating method because Clarke illustrates in Fig.2c, 2d that high speed method having wide viscosity latitude negating the limitations of puddling and air entertainment and reducing



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the amounts of volatile components in the coating compositions (col.3, lines 55-59).

***Response to Arguments***

3. Applicant's arguments filed on 9/3/2010 have been fully considered but they are not persuasive.

*With respect to claim 1*, applicants' arguments on page 9 of the reply asserting that the prior art of Yokota et al. (USP 6,497,926) discloses a pressure-sensitive copying paper while the instant application is based on a thermal paper are not convincing. Applicants' claim 1 and extensive discussion on pages 3-7 of the applicants' specification discloses a method for producing thermal paper that includes the step of applying and adjusting weight applied by means of the curtain-coating method to the composition. Therefore, the curtain coating method employed in the pressure-sensitive copying paper and the thermal paper generally include the step of applying weight to the composition as illustrated in Yokota (see Examples 1-.17)

*Applicants' arguments on page 10* of the reply asserting that the prior art of Nakamura does not disclose the use of calcined kaolin are again not convincing because Yokota discloses the presence of calcined kaolin in the aqueous composition (col.12, line 64) and the secondary reference of Nakamura is brought in to illustrate the operating speeds with an upper limit of 1000 m/min (col.7, lines 18-20) in the fabrication of copying paper. It is noted that according

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to applicants' claim 1, calcined kaolin is an optional component in the applicants' process of fabricating a thermal paper

*Applicants' arguments on page 11* of the reply asserting that the prior art of Clark teaches increased web velocity up to about 775 cm/s with maximum viscosity of 170 mPas when a high level of roughness is present are not convincing. Clark discloses in Fig.4, the air entrainment speed, viscosity and the roughness of the receiving surface are inter-related and hence one who is skilled in the should be able to adjust and optimize these parameters in the fabrication of thermal paper.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Obringer et al. (US Patent no. 4,853,256) discloses a two ply thermal paper and method of making.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAKI A. ANGADI whose telephone number is (571)272-8213. The examiner can normally be reached on 8 AM to 4.30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G. Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information

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for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Maki A Angadi/  
Examiner, Art Unit 1792

/Nadine G Norton/  
Supervisory Patent Examiner, Art Unit 1713